

## **OIL ANALYSIS REPORT**

## Area Bernardsville Machine Id ISUZU 3458

Component Diesel Engine Fluid

GIBRALTAR 15W/40 SUPER S-3 LX (11)

### DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

#### Wear

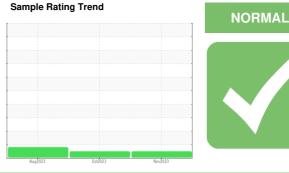
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

## Fluid Condition

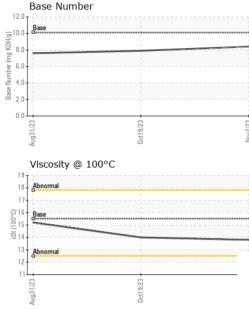
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

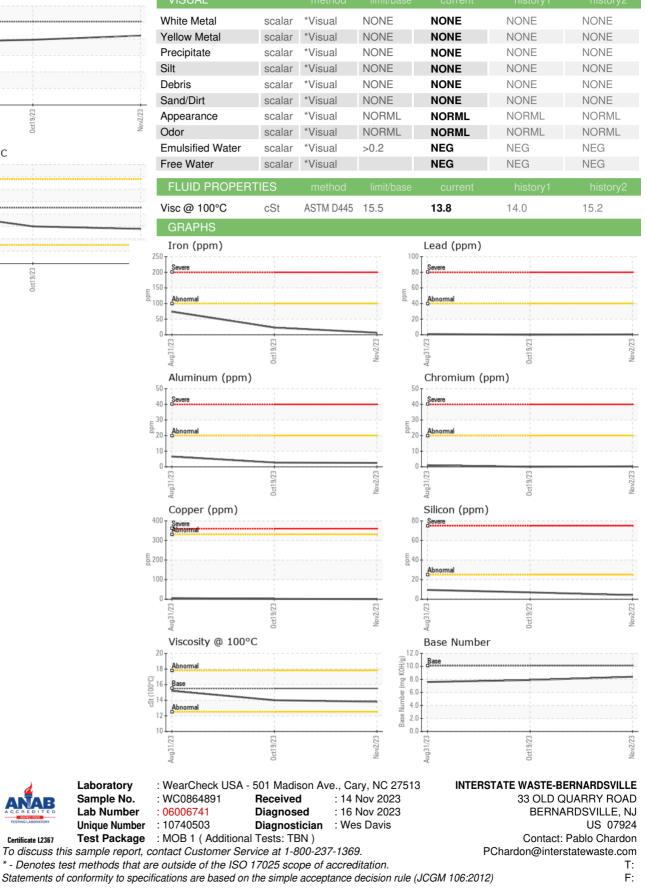


Sample NumberClient InfoWC0864891WC0864891WC0864891WC0803083Sample DateClient Info687167576357Oil AgehrsClient Info687167576357Oil ChangedClient InfoMCNRMLNORMALABNORMALSample StatusClient InfoInfoChangedChangedChangedGlycolWC Methods5<1.0<	SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Date     Image     Client Info     02 Nov 2023     19 Oct 2023     31 Aug 2023       Machine Age     hrs     Client Info     6871     6757     6357       Oil Age     hrs     Client Info     0     6757     6357       Oil Changed     Image     Client Info     0     6757     6357       Oil Changed     Image     Client Info     NORMAL     NORMAL     ABNORMAL       CONTAMINATION     method     Imit/base     current     history1     history2       Fuel     WC Method     >5     1.0     <1.0     <1.0       Glycol     Method     imit/base     current     history1     history2       From     mppm     ASIM 05185m     >100     7     23     74       Chromium     ppm     ASIM 05185m     >20     -1     0     0       Silver     ppm     ASIM 05185m     >20     2     3     7       Lead     ppm     ASIM 05185m     >33     -1     0     0     -1 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>WC0864891</th> <th>WC0864906</th> <th>WC0830836</th>	Sample Number		Client Info		WC0864891	WC0864906	WC0830836
Machine AgehrsClient Info687167576357Oil AgeIrrsClient Info067576357Oil ChangedChangedChangedChangedChangedChangedSample StatusaaImit/baseCurrentNORMALABNORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC MethodS<1.0<1.0<1.0Glycol1WC MethodS<1.0NEGNEGWEAR METALSmethodimit/basecurrenthistory1history2IronppmASTM DSI85>10072374ChromiumppmASTM DSI85>40000NickelppmASTM DSI85>33<1100SilverppmASTM DSI85>330<110<11CopperppmASTM DSI85>330<100VanadiumppmASTM DSI8515000VanadiumppmASTM DSI8515000Rorn MagneseppmASTM DSI85150001MagnagenseppmASTM DSI85150011MagnagenseppmASTM DSI85100580978GaldumppmASTM DSI851050111511401342MagnagenseppmASTM DSI85150011 <tr< th=""><th></th><th></th><th>Client Info</th><th></th><th>02 Nov 2023</th><th>19 Oct 2023</th><th>31 Aug 2023</th></tr<>			Client Info		02 Nov 2023	19 Oct 2023	31 Aug 2023
Oil Changed Sample StatusClient Info NORMALChanged NORMALChanged NORMALChanged ABNORMALCONTAMINATIONmethodimil/basecurrenthistory1history2FuelWC Method>5+1.0<1.0<1.0GlycolwC Method>5+1.0NEGNEGWEAR METALSmethodimil/baseournenthistory1history2IronppmASTM D585m>10072.37.4ChromiumppmASTM D585m>2.0<100NickelppmASTM D585m>2.0<100SilverppmASTM D585m>2.0<100AluminumppmASTM D585m>3.0<10<1CopperppmASTM D585m>3.0<10<1CadmiumppmASTM D585m>3.0<10<1VanadiumppmASTM D585m>1.00<1<1VanadiumppmASTM D585m>1.00<1<1CadmiumppmASTM D585m1.00<1<1RoronppmASTM D585m1.00<1<1ManganescppmASTM D585m1.00<1<1ManganescppmASTM D585m1.00<1<1ManganescppmASTM D585m1.00<1<1ManganescppmASTM D585m1.0	Machine Age	hrs	Client Info		6871	6757	6357
Sample Status     Image: Status     NORMAL     NORMAL     ABNORMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >5     <1.0     <1.0     <1.0       Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     7     23     74       Chromium     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >30     <1     2     6       Tin     ppm     ASTM D5185m     10     0     0     1       Vanadium     ppm	Oil Age	hrs	Client Info		0	6757	6357
CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >5     <1.0     <1.0     <1.0       Glycol     WC Method     >5     <1.0     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >4     0     0     0       Aluminum     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >30     <1     2     6       Copper     ppm     ASTM D5185m     >30     <1     2     6       Cadmium     ppm     ASTM D5185m     0     0     1     1       Vanadium     ppm     ASTM D5185m     66     66     66     67	Oil Changed		Client Info		Changed	Changed	Changed
Fuel     WC Method     >5     <1.0	Sample Status				NORMAL	NORMAL	ABNORMAL
Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     <1     0     0       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >15     0     0     1       Vanadium     ppm     ASTM D5185m     0     0     1     1       Vanadum     ppm     ASTM D5185m     0     0     1     1       Vanadum     ppm     ASTM D5185m     0     0     1     1       Vanadum<	CONTAMINATION	N	method	limit/base	current	history1	history2
Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     <1     0     0       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >4     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >330     <1     0     <1       Vanadium     ppm     ASTM D5185m     10     0     <1     1       Vanadium     ppm     ASTM D5185m     0     0     <1     1       Vanadium     ppm     ASTM D5185m     0     0     <1     1       Vanadium     ppm     ASTM D5185m     0     0     <1     1       <	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron     ppm     ASTM D5185m     >100     7     23     74       Chromium     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >20     2     3     7       Copper     ppm     ASTM D5185m     >40     <1     0     <1       Cadmium     ppm     ASTM D5185m     >30     <1     2     6       Tin     ppm     ASTM D5185m     >15     0     0     <1       Cadmium     ppm     ASTM D5185m     105     0     0     <1       Cadmium     ppm     ASTM D5185m     100     580     495     978       Cadium     ppm     ASTM D5185m     1000     580     495	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >4     0     0     0       Titanium     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >330     <1     0     <1     6       Copper     ppm     ASTM D5185m     15     0     0     <1     1       Vanadium     ppm     ASTM D5185m     0     0     <1     1       Cadmium     ppm     ASTM D5185m     37     23     3     3       Boron     ppm     ASTM D5185m     100     580     495     978       Calcium     ppm     ASTM D5185m     1000     580	Iron	ppm	ASTM D5185m	>100	7	23	74
Nickel     ppm     ASTM D5185m     >4     0     0     0       Titanium     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >40     <1     0     <1       Copper     ppm     ASTM D5185m     >40     <1     2     6       Tin     ppm     ASTM D5185m     >15     0     0     <1       Cadmium     ppm     ASTM D5185m     15     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     <1        Cadmium     ppm     ASTM D5185m     0     0     <1     <1       Roron     ppm     ASTM D5185m     66     66     66     67     <1     <1       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050	Chromium		ASTM D5185m	>20	<1	0	1
Titanium     ppm     ASTM D5185m     >3     <1	Nickel		ASTM D5185m	>4	0	0	0
Aluminum     ppm     ASTM D5185m     >20     2     3     7       Lead     ppm     ASTM D5185m     >40     <1     0     <1       Copper     ppm     ASTM D5185m     >330     <1     2     6       Tin     ppm     ASTM D5185m     >15     0     0     1       Vanadium     ppm     ASTM D5185m     >15     0     0     <1       Cadmium     ppm     ASTM D5185m     10     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     66     66     67     0     0       Magnesea     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     921     1081       Zinc     ppm     ASTM D5185m     120     114	Titanium		ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >40     <1	Silver	ppm	ASTM D5185m	>3	<1	0	0
Copper     ppm     ASTM D5185m     >330     <1	Aluminum	ppm	ASTM D5185m	>20	2	3	7
Tin     ppm     ASTM D5185m     >15     0     0     1       Vanadium     ppm     ASTM D5185m     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     23     3       Barium     ppm     ASTM D5185m     66     66     67       Magnaese     ppm     ASTM D5185m     66     66     67       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1150     986     921     1081       Zinc     ppm     ASTM D5185m     1270     11115     1140     1342       Sulfur     ppm     ASTM D5185m     >22     4     7     10       Sodium	Lead	ppm	ASTM D5185m	>40	<1	0	<1
Vanadium     ppm     ASTM D5185m     0     0     <1	Copper	ppm	ASTM D5185m	>330	<1	2	6
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     23     3       Barium     ppm     ASTM D5185m     66     0     0       Molybdenum     ppm     ASTM D5185m     66     66     66     67       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0 <th>Tin</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;15</th> <th>0</th> <th>0</th> <th>1</th>	Tin	ppm	ASTM D5185m	>15	0	0	1
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     23     3       Barium     ppm     ASTM D5185m     66     0     0       Molybdenum     ppm     ASTM D5185m     66     66     66     67       Magnesse     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     220     1115     1140     1342       Sulfur     ppm     ASTM D5185m     >20     2     3     0       Sodium     ppm     ASTM D5185m     >20     2 <td< th=""><th>Vanadium</th><th>ppm</th><th>ASTM D5185m</th><th></th><th>0</th><th>0</th><th>&lt;1</th></td<>	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron     ppm     ASTM D5185m     37     23     3       Barium     ppm     ASTM D5185m     6     0     0       Molybdenum     ppm     ASTM D5185m     66     66     66     67       Manganese     ppm     ASTM D5185m     0     <1     <1       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     150     986     921     1081       Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     6     0     0       Molybdenum     ppm     ASTM D5185m     66     66     66     67       Manganese     ppm     ASTM D5185m     0     <1     <1       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1050     1394     1521     1081       Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     225     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0     1115       INFRA-RED     method     imit/base     current </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Molybdenum     ppm     ASTM D5185m     66     66     66     67       Manganese     ppm     ASTM D5185m     0     <1     <1       Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1050     1394     1521     1081       Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     225     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     imit/base     u	ADDITIVES		method	limit/base	current	history1	history2
Manganese     ppm     ASTM D5185m     0     <1		ppm		limit/base			
Magnesium     ppm     ASTM D5185m     1000     580     495     978       Calcium     ppm     ASTM D5185m     1050     1394     1521     1348       Phosphorus     ppm     ASTM D5185m     1150     986     921     1081       Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     25     4     7     10       Sodium     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844	Boron		ASTM D5185m	limit/base	37	23	3
Calcium   ppm   ASTM D5185m   1050   1394   1521   1348     Phosphorus   ppm   ASTM D5185m   1150   986   921   1081     Zinc   ppm   ASTM D5185m   1270   1115   1140   1342     Sulfur   ppm   ASTM D5185m   3934   3182   3583     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >20   2   3   0     Sodium   ppm   ASTM D7844   >3   0.3   1   3     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   0.3   1   3     Nitration   Abs/cm   *ASTM D74153	Boron Barium	ppm	ASTM D5185m ASTM D5185m		37 6	23 0	3 0
Phosphorus     ppm     ASTM D5185m     1150     986     921     1081       Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     20     3934     3182     3583       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0       Potassium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >3     0.3     1     3       Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7415	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		37 6 66	23 0 66	3 0 67
Zinc     ppm     ASTM D5185m     1270     1115     1140     1342       Sulfur     ppm     ASTM D5185m     1270     1115     3182     3583       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >3     0.3     1     3       Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7615     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7614	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	37 6 66 0	23 0 66 <1	3 0 67 <1
SulfurppmASTM D5185m393431823583CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>254710SodiumppmASTM D5185m034PotassiumppmASTM D5185m>20230INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.31▲ 3NitrationAbs/cm*ASTM D7624>206.29.314.6SulfationAbs/lmm*ASTM D7415>3017.719.728.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2512.615.022.8	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000	37 6 66 0 580 1394	23 0 66 <1 495 1521	3 0 67 <1 978 1348
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>254710SodiumppmASTM D5185m034PotassiumppmASTM D5185m>20230INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.31▲ 3NitrationAbs/cm*ASTM D7624>206.29.314.6SulfationAbs/lmm*ASTM D7415>3017.719.728.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/lmm*ASTM D7414>2512.615.022.8	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	37 6 66 0 580 1394 986	23 0 66 <1 495 1521 921	3 0 67 <1 978 1348 1081
Silicon     ppm     ASTM D5185m     >25     4     7     10       Sodium     ppm     ASTM D5185m     0     3     4       Potassium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7615     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7614     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050 1150	37 6 66 0 580 1394 986 1115	23 0 66 <1 495 1521 921 1140	3 0 67 <1 978 1348 1081 1342
Sodium     ppm     ASTM D5185m     0     3     4       Potassium     ppm     ASTM D5185m<>20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.3     1     ▲ 3       Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050 1150	37 6 66 0 580 1394 986 1115	23 0 66 <1 495 1521 921 1140	3 0 67 <1 978 1348 1081 1342
Potassium     ppm     ASTM D5185m     >20     2     3     0       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.3     1     ▲ 3       Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270	37 6 66 0 580 1394 986 1115 3934	23 0 66 <1 495 1521 921 1140 3182 history1	3 0 67 <1 978 1348 1081 1342 3583 history2
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.31▲ 3NitrationAbs/cm*ASTM D7624>206.29.314.6SulfationAbs/.1mm*ASTM D7415>3017.719.728.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2512.615.022.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	66 1000 1050 1150 1270 limit/base	37 6 66 0 580 1394 986 1115 3934 current	23 0 66 <1 495 1521 921 1140 3182 history1	3 0 67 <1 978 1348 1081 1342 3583 history2
Soot %     %     *ASTM D7844     >3     0.3     1     ▲ 3       Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	66 1000 1050 1150 1270 limit/base >25	37 6 66 0 580 1394 986 1115 3934 current 4	23 0 66 <1 495 1521 921 1140 3182 history1 7 3	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4
Nitration     Abs/cm     *ASTM D7624     >20     6.2     9.3     14.6       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	66 1000 1050 1150 1270 limit/base >25	37 6 66 0 580 1394 986 1115 3934 current 4 0	23 0 66 <1 495 1521 921 1140 3182 history1 7 3	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4
Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     19.7     28.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >25 >20	37 6 66 0 580 1394 986 1115 3934 current 4 0 2	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 0 history2
FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 12.6 15.0 22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 <b>limit/base</b> >25 >20 <b>limit/base</b>	37 6 66 0 580 1394 986 1115 3934 <u>current</u> 4 0 2	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 0 history2
Oxidation     Abs/.1mm     *ASTM D7414     >25     12.6     15.0     22.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	37 6 66 0 580 1394 986 1115 3934 <u>current</u> 4 0 2 <u>current</u> 0.3	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3 history1 1	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 history2 ∧ 3
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >25 >20 limit/base >3 >20	37 6 66 0 580 1394 986 1115 3934 <i>current</i> 4 0 2 <i>current</i> 0.3 6.2	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3 history1 1 9,3	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 history2 0 history2 3 10 4 0
Base Number (BN)     mg KOH/g     ASTM D2896     10.1     8.4     7.9     7.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 225 >25 >20 <b>limit/base</b> >3 >20 >3 >20	37 6 66 0 580 1394 986 1115 3934 <u>current</u> 4 0 2 <u>current</u> 0.3 6.2 17.7	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3 history1 1 9.3 19.7	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 0 history2 3 14.6 28.6
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	66 1000 1050 1150 1270 225 220 220 imit/base >3 >20 >30 30 imit/base	37 6 66 0 580 1394 986 1115 3934 <i>current</i> 4 0 2 <i>current</i> 0.3 6.2 17.7 <i>current</i>	23 0 66 <1 495 1521 921 1140 3182 history1 7 3 3 3 history1 1 9.3 19.7 history1	3 0 67 <1 978 1348 1081 1342 3583 history2 10 4 0 history2 0 history2 3 14.6 28.6



# **OIL ANALYSIS REPORT**





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Contact/Location: Pablo Chardon - INTBER